

WHAT IS CLAIMED IS:

1. A method of reducing the water requirements of a cementitious slurry comprising:

adding to a formulation used to form the slurry an effective amount of a mineral component selected from the group consisting of:

(i) fly ash having a predominant particle size of up to about 10 microns;

(ii) aluminous material having a predominant particle size of up to about 150 microns; and

(iii) both the fly ash of (i) and the aluminous material of (ii).

2. A method according to claim 1, wherein the mineral component is added to a dry formulation.

3. A method according to claim 1, wherein the mineral component is added to the formulation after the formulation is formed into the slurry.

4. A method according to claim 1, wherein the fly ash comprises about 25-60% silica, about 10-30% Al_2O_3 , about 5-25% Fe_2O_3 up to about 20% CaO and up to about 5% MgO.

5. A method according to claim 1, wherein the fly ash comprises about 30-100 wt% based on weight of cement in the slurry.

6. A method according to claim 1, wherein the aluminous material is selected from the group consisting of hydrated alumina, partially hydrated alumina and unhydrated alumina.

7. A method according to claim 1, wherein the aluminous material comprises about 5 to 30 wt% based on weight of cement in the slurry.

8. A method according to claim 1, wherein the ratio of hydrated alumina to fly ash is between about 1:1 and 1:10.

9. A method according to claim 1, wherein the cementitious slurry comprises a hydraulic binder that is between about 10 and 50 wt% of total dry ingredients.

10. A method according to claim 1, wherein the slurry contains conventional plasticiser.

11. A method according to claim 10 wherein the amount of conventional plasticiser is between about 0.3 and 3 wt% based on weight of the dry cement.

12. A method according to claim 1, wherein the cementitious slurry contains about 5 to 30 wt% of fillers.

13. A method according to claim 1, wherein the mineral component is fly ash having a predominant particle size of up to about 10 microns.

14. A method according to claim 1, wherein the mineral component is aluminous material having a predominant particle size of up to about 150 microns.

15. A method according to claim 1, wherein the mineral component includes both the fly ash of (i) and the aluminous material of (ii).

16. A method of manufacturing a cementitious slurry, comprising:

providing a hydraulic binder used to form the slurry;

adding to the hydraulic binder an effective amount of a mineral component selected from the group consisting of:

(i) fly ash having a predominant particle size of up to about 10 microns;

(ii) aluminous material having a predominant particle size of up to about 150 microns; and

(iii) both the fly ash of (i) and the aluminous material of (ii).

17. A method according to claim 16, wherein the mineral component is added to the hydraulic binder after forming a slurry with the hydraulic binder.

18. A method according to claim 16, wherein the mineral component is added to the hydraulic binder before forming a slurry with the hydraulic binder.

19. A method according to claim 16, wherein the fly ash comprises about 25-60% silica, about 10-30% Al_2O_3 , about 5-25% Fe_2O_3 up to about 20% CaO and up to about 5% MgO.

20. A method according to claim 16, wherein the fly ash comprises about 30-100 weight percent based on weight of cement.

21. A method according to claim 16, wherein the aluminous material is selected from the group consisting of hydrated alumina partially hydrated alumina and unhydrated.

22. A method according to claim 16, wherein the alumina content of the aluminous material is between about 5 and 30% based on weight of cement.

23. A method according to claim 16, wherein the ratio of hydrated alumina to fly ash is between about 1:1 and 1:10.

24. A method according to claim 16, wherein the hydraulic binder is selected from the group consisting of common Portland cements, fast setting or extra fast setting cement, sulphate resisting cements, modified cements, alumina cements, high alumina cements, calcium aluminate cements and cements which contain secondary components such as fly ash, slag and the like.

25. A method according to claim 16, wherein the hydraulic binder is between about 10 and 50 wt% of total dry ingredients.

26. A method according to claim 16, wherein the slurry contains conventional plasticiser

27. A method according to claim 26, wherein the amount of conventional plasticiser between about 0.3 and 3 wt% based on weight of the dry cement.

28. A method according to claim 16, wherein the hydraulic binder contains about 5 to 30 wt% of fillers.

29. A method according to claim 16, wherein the addition of the mineral components improves one or more of setting time, workability, pumpability, bleeding during settling, resultant compressive strength and shrinkage.

30. A method according to claim 16, wherein the mineral components are added to replace either partially or wholly a conventional plasticiser in the cementitious slurry.

31. A method according to claim 16, wherein the mineral component is fly ash having a predominant particle size of up to about 10 microns.

32. A method according to claim 16, wherein the mineral component is aluminous material having a predominant particle size of up to about 150 microns.

33. A method according to claim 16, wherein the mineral component includes both the fly ash of (i) and the aluminous material of (ii).